

THE EFFECTS OF COMPUTER-AIDED ANTERO-POSTERIOR FOREHEAD
MOVEMENT ON RATINGS OF FACIAL ATTRACTIVENESS

by

Heidi Susan Ellis
Lieutenant Commander, Dental Corps
United States Navy

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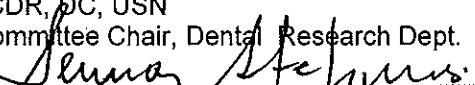
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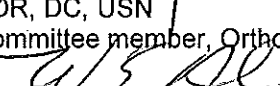
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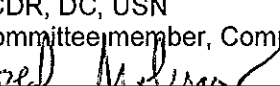
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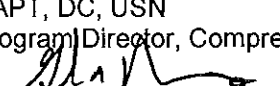

Ling Ye, DDS, PhD
LCDR, DC, USN
Committee Chair, Dental Research Dept.


Sennay Stefanos, DMD, MS
CDR, DC, USN
Committee member, Orthodontic Dept.


Marc Arena, DMD, MS
CAPT, DC, USN
Associate Professor and Comp Dept. Head


Jaysón Huber, DDS, MS
LCDR, DC, USN
Committee member, Comprehensive Dept.


Joseph Molinaro, DMD, MS
CAPT, DC, USN
Program Director, Comprehensive Dept.


Glenn A. Munro, DDS, MBA
CAPT, DC, USN
Dean, Naval Postgraduate Dental School

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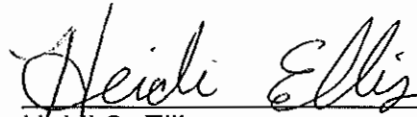
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Heidi S. Ellis
Comprehensive Dentistry Graduate Program
Naval Postgraduate Dental School
June 2015

NAVAL POSTGRADUATE DENTAL SCHOOL
Heidi S. Ellis

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MANUSCRIPT FOR SUBMISSION TO AMERICAN JOURNAL OF
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Heidi S. Ellis
DDS, Comprehensive Dentistry, 2015

Directed by: Ling Ye, DDS, PhD
LCDR, DC, USN
Department of Dental Research
Naval Postgraduate Dental School

Sennay Stefanos, DMD, MS
CDR, DC, USN
Orthodontic Department Head
Naval Postgraduate Dental School

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LIST OF ABBREVIATIONS

Abbreviation

1. 3D, Three-dimensional
2. AJODO, American Journal of Orthodontics and Dentofacial Orthopedics
3. AP, Antero-posterior
4. CITI, Collaborative Institutional Training Initiative
5. FA, Facial-Axis
6. FMIA, Frankfort-Mandibular Incisor Angle
7. GALL, Goal Anterior Limit Line
8. ICC, Intra-Class Correlation Coefficient
9. ICMJE, International Committee of Medical Journal Editors
10. IRB, Institutional Review Board
11. NPDS, Naval Postgraduate Dental School
12. SAA, Same As Above
13. STCA, Soft Tissue Cephalometric Analysis
14. TVL, True Vertical Line
15. USUHS, Uniformed Services University of the Health Sciences
16. VAS, Visual Analog Scale

GUIDELINE I: TITLE PAGE

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Heidi S. Ellis, DDS, MS, LCDR, DC, USN
Comprehensive Department, Naval Postgraduate Dental School
8955 Wood Rd, Bethesda, MD 20889-5628. (301) 319-4815
Heidi.s.ellis.mil@mail.mil

GUIDELINE II: ABSTRACT

INTRODUCTION: Orthodontic treatment goals usually include an "Ideal" class I occlusion and skeletal relationship. Cephalometric analysis can be used in this quest. This technique, though, does not take into account the soft tissue profile. L. F. Andrews theorized that the forehead position should be used as a reference because it is external and does not move during the course of surgical treatment. The goal of this study is to determine whether changes in patient's forehead will affect evaluators' subjective ratings of facial attractiveness.

METHODS: Smiling profile photographs of three female models of different races were captured. The photographs were then digitally manipulated at the soft tissue glabella to simulate forward movement by 2, 4, and 6mm and backward by 2mm. Twenty general dentists and twenty laypersons then scored the attractiveness of the photographs using a 0-100mm visual analogue scale.

RESULTS: Dentists consistently selected the original photographs without manipulation as one of the most attractive ones. Compared with laypersons, dentists could differentiate the change especially at the most extreme position of +6mm.

CONCLUSIONS: The findings of this study suggest that changes of AP position of the glabella impact the appreciation of facial attractiveness for dentists and may assist in achieving superior results during treatment.

GUIDELINE III: MANUSCRIPT

CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

Facial esthetics in relation to treatment planning

Successful outcomes in treatment planning involve three basic steps: proper diagnosis, a thorough treatment plan, and flawless execution of the chosen treatment. In many instances facial esthetic outcomes, are not taken into account during this initial treatment planning phase. Sometimes even with the best of treatment plans the final results may be less than optimal due to facial esthetic desires of the patient (Arnett & Gunson, 2004). As a result, facial esthetics should have a higher priority in the treatment planning process (Spyropoulos & Halazonetis, 2001) and should be evaluated early in the treatment planning process.

Effects of hard tissue manipulation on facial profile and overlying soft tissue

In severe cases of malocclusion orthodontists and oral surgeons routinely plan cases in which they move one or both jaws. This can affect the facial profile of these patients (Angle, 1899). The new post-surgical soft tissue profile potentially can have an impact on subjective attractiveness of these patients as indicated by Spyropoulos & Halazonetis study (2001).

Another area of concern is how the drastic surgical treatment will affect the overlying soft tissue. A study by Kasai (1998) analyzed pre and post cephalometric measurements of 32 Japanese women who had four premolars extracted in their orthodontic treatment. Measurements were made of the hard tissues and the overlying soft tissues. He found variable results as certain facial reference points

exhibited no change following treatment, while others, particularly in the lower face, showed significant changes. The soft tissue didn't follow the hard tissues uniformly and caused changes in the subject's facial profile. Therefore, Kasai revealed that the relationship between the hard and soft tissues is complicated and unpredictable.

Tools for AP Assessment

In preparation for these more complicated surgical cases, there is not a universally accepted method for determining the AP position of the jaws. The following are references that have been proposed by subject matter experts in the field of orthodontics. Tweed (1954) described the use of Frankfort-Mandibular Incisor Angle (FMIA) as a diagnostic reference utilizing lateral cephalometric tracing. Ricketts (1968) defined his reference as the esthetic plane, a line from the nose to the chin. McNamara (1984) outlined a step-by-step procedure of cephalometric evaluation of hard tissue landmarks for treatment planning of his orthodontic cases. Holdaway (1983, 1984) described the use of soft tissue cephalometric analysis in orthodontic treatment planning. Arnett and colleagues (1999) proposed the true vertical line (TVL), which uses subnasale, as a reference in their cephalometric analysis for diagnosis and treatment planning.

Andrews rendered each of these landmarks as unpredictable (2008) because they are either internal and do not represent the external soft tissue, they are on areas that are still growing such as the nose (Antoszewski, Sitek, & Kruk-Jeromina, 2005; Kushimoto, 1990), or they are likely to move during the course of

the surgical treatment. Dr Andrews, therefore, proposed the forehead as a reference in AP jaw alignment.

Andrews' Element II in determining AP jaw position

To date, the most used guide in orthodontic treatment planning is the Andrews six elements of orofacial harmony including the six keys to normal occlusion. (Andrews & Andrews, 2000, Andrews, 1972). Andrews' element II specifically relates to the AP position of the jaws (Figure A). He postulates that the AP position of the maxilla is optimal when the Facial Axis (FA) points of maxillary incisors are on the Goal Anterior Limit Line (GALL). The GALL is a line that parallels the frontal plane of the head and passes through the Forehead's Facial-Axis Point (Andrews & Andrews, 2000). W. A. Andrews found in his study of 94 white females that 93% of the harmonious profiles had the maxillary central incisors positioned anterior to the FA point of the forehead and posterior to the soft tissue glabella (2008). Therefore, Andrews advises not to place FA points of the maxillary incisors anterior to the soft tissue glabella (Andrews & Andrews, 2000).

The rationale for this method is that the soft tissue forehead is an external part of the face rather than an internal structure and typically does not move during orthognathic surgery. They emphasize that there is a critical relationship between the maxillary incisors and the forehead and that attractive faces share a harmony between the two points regardless of ethnicity, gender, or age (Andrews & Andrews, 2000).

Purpose of the study

Andrews' Elements are observations which are lacking scientific data. For element II, specifically, only two studies were found to challenge the GALL as a reference for determining the AP position of the jaw. Schlosser, Preston and Lampasso (2005) photographed the facial profile of a white female patient and generated a series of alterations in which the maxillary incisors were misaligned relative to the GALL. Analysis determined that the image with the most misaligned AP position of the jaw was the least attractive to both orthodontists and laypersons. Cao and colleagues (2011) concluded that Element II is a useful reference for smiling profile esthetics in young adult females and that small changes in AP position even ahead of the GALL did not damage the esthetics of the smiling profile as long as the incisors were upright. These studies have reported that both dentists and laypersons judge differences in facial aesthetics based on the position of the maxillary incisors in relation to the GALL, no studies using the forehead as a reference for attractiveness were found. Therefore, the purpose of this study is to determine if changes in the anterior-posterior position of a patient's soft tissue glabella affect evaluators' subjective ratings of facial attractiveness. The null hypothesis is that there will be no difference in the attractiveness after the position of the forehead has changed.

CHAPTER 2: METHODS AND MATERIALS

Models

Three volunteer female models, 18 years or older, were selected from orthodontic patient evaluations at Naval Postgraduate Dental School (NPDS),

Bethesda MD. The models represented different races (Caucasian, Asian, and African American). The models had nasolabial angle within the normal range (114 ± 10 degrees) as described by Fitzgerald, Nanda, and Currier (1992). Exclusion criteria included no major skeletal deformities and not in active orthodontic treatment. Each model signed the NPDS release form giving their permission to use their photos.

Right lateral profile photographs were taken by the same photographer with a Canon Rebel XTI digital camera (Canon, Newport News, VA) under standard conditions (Schlosser, Preston & Lampasso, 2005) (Figure B). The first image was taken in repose and was used to ensure that the patient fell within the inclusion criteria for the study. The second image, a smiling profile photograph, was captured with a 100-mm ruler fixed in front of the subject's nose to calibrate for magnification and a hanging plumb to assist in paralleling the subject's head position (Figure C).

Image Alteration

The model's smiling profile photograph was altered with a computer graphics program (Adobe Photoshop Version 7.0.1, Adobe systems). Four altered images were created by moving the soft tissue glabella forward in a horizontal plane by 2 mm, 4 mm, and 6 mm, and backward in a horizontal plane by 2 mm (Figure C). The alterations were conducted by an information technology (IT) specialist at NPDS with experience using the Photoshop computer program. The ruler and the plumb were removed from the altered photos to eliminate distractions.

The original and four altered images of each model were printed on 8.5" x 11" photo paper (Figure D), labelled 1 through 15, and placed in a binder for evaluation. The website (<http://www.stattek.com/statistics/random-number-generator.aspx>) was utilized to place the photos in a randomized viewing order for each of the models. The photos for each model were grouped together in the binder adopted from Kokich, Kokich and Kiyak (2006).

Subjects/Evaluators

Two groups of subjects, twenty general dentists and twenty laypersons, volunteered to evaluate the profile photographs. The sample size was based on a previous study by Johnston, Burden, & Stevenson (1999). The laypersons had no professional background in any aspect of dentistry and the general dentists were trained and licensed in the U.S., and had no formal specialty training. All of the general dentists were recruited at NPDS.

Rating of Photographs

Each subject received the binder of photographs, a 100-mm visual analog scale per photo (Figure E), and written and verbal instructions (Figure F). The principal investigator, who was present for all of the 40 sessions, gave the instructions and answered any questions. After the subject acknowledged that he or she understood the instructions, the principal investigator offered no further guidance. Each subject rated the attractiveness of the 15 photographs by placing a vertical mark along the corresponding VAS line. All of the subjects viewed the images in the sequence provided and were not allowed to return to the previously viewed photos conditions (Schlosser, Preston & Lampasso, 2005).

Data Collection

Each VAS rating was measured from the 0 line using a 100-mm ruler to the closest millimeter increment. Measurements were entered into a Microsoft Excel spread sheet (Table 1) for data analysis.

Statistical Analysis

The raw scores were standardized to Z scores as suggested by Johnston, Burden and Severson (1999). The standardization formula is as follows (Schlosser, Preston, & Lamposso, 2005):

$$Z \text{ score} = \frac{[\text{Subjects Attractiveness rating} - \text{Population mean rating score}]}{\text{Population's standard deviation}}$$

Friedman's post hoc test and Wilcoxon signed ranks test were used for analysis of the data (Table 2). Pairwise comparisons of the original view to each of the altered views -- -2mm, +2mm, +4mm, +6mm -- were analyzed using the Wilcoxon signed ranks test. The factors involved were subject (Dentists and Laypersons), model's race (Caucasian, Asian, and African American), and photograph (five variations per subject)(Table 2). The level of significance for the Friedman's post hoc test was set to 0.05 and for the Wilcoxon signed ranks test a Bonferroni adjusted P value was set to 0.0125.

CHAPTER 3: RESULTS

The mean Z-scores for each model are summarized by the bar graphs in Figure G. The x-axis represents the subject type, dentist versus layperson, and the y-axis represents the mean z-score. A positive number on the y axis represents an attractive (high) rating on the VAS scale and a negative number represents an unattractive (low) rating on the VAS scale.

Table 3 represents the Friedman's analysis of the Z-scores. Significance is depicted in red. The dentists' results were considered significant for all of the models concluding that the dentists were able to appreciate the change between all five of the photos. The number of subjects that felt there was no change amongst all the photos is represented in table 4. The laypersons, nearly 50% of the time, could not appreciate a change in the photographs while the dentists almost always could.

The Wilcoxon's Test results of the Z-scores are represented in Table 5. This is a pairwise comparison of the original vs. the altered photos. Significance is again depicted in red. If we use the p-value .05 as with the Friedman's analysis, significance was seen in the Caucasian when comparing the original photo to the photo that had the soft tissue glabella protruded 6mm by both the laypersons and the dentists. The dentists also showed statistical significance at the 2mm and the -2mm. It is probably a better practice to use an adjusted p-value by doing a Bonferroni adjustment. This is more conservative and the adjusted p-value would be 0.0125. With this adjusted p-value the only significance is seen with the dentists and the Asian model at the most extreme change.

CHAPTER 4: DISCUSSION

A comment that was made by many of the evaluators during this study was that all of the photos for the models looked the same. In fact nearly 50% of the laypersons couldn't tell the difference and rated every photo, the original and all of the altered photos with the same score on the VAS.

Profile photographs were used to assess the models facial features. One thought is that the facial view more important for attractiveness than profile view. Maybe this is a reason that so few could appreciate a change between the photos. Another thought is that photographs merely a moment in time and fail to provide information in relation to the constantly changing nature of a patient's face. A study by Schabel, Baccetti, Franchi and McNamara suggested the use of video clips of patients smiling as an alternative method to assess the attractiveness of the model (2010). Using this technique the patients face could be seen from every angle and a more accurate assessment of the attractiveness could be made. 3-D model information will be considered in follow-up studies.

When evaluating the Z-scores it was noted that the Caucasian model was the only model that had a similar trend between the dentists and the laypersons. The results showed that the original was considered the most attractive and the +6mm was considered the least attractive for both populations. We were expecting to see similar trends between all of the races as Andrews theorized. Andrews concluded that the harmony between the maxillary incisors and the forehead should be consistent regardless of ethnicity, gender, or age (2000). However, we did not find the same trend with the other models. Possible reasons for these findings are that the Caucasian model was the only one of the models that had make-up applied for the photo. The other models had evident blemishes and other distractions. For future sessions it would be advisable during the photo alteration to use the blemish removal/ correction tool to remove any possible distractions from the photo as was suggested by Schabel, Baccetti, Franchi and

McNamara (2010). Another possible solution would be to remove make up as a variable by ensuring that the model photographs are taken without make up. Another factor to consider was that the majority of the evaluators that participated in the study were Caucasian, which may have introduced some bias toward the Caucasian model. One way to account for this in the future would be to have a more diverse group of evaluators.

When we evaluated the models for the GALL as described by Andrew's Element II we did find that the Asian and the African American model both had Maxillary Anterior teeth in the original photo forward of the Soft tissue glabella which is not advised in Andrews proposal. The alteration photos where the Asian and the African American actually line up are the +4mm and +6mm, respectively. The original for the Caucasian was close to ideal with the Maxillary incisors in line with the soft tissue glabella.

CHAPTER 5: CONCLUSIONS

The results of this study reject the null hypothesis especially for the dentist group. Dentists seem to have a sharper eye for detail than the laypersons as shown in the Friedman's analysis. The attractiveness ratings of the dentists and the laypersons trended similarly between the original and the 4 altered photographs for the Caucasian model. The original was the most attractive and the most extreme change of 6 mm was the least attractive similar to the Schlosser, Preston and Lampasso study (2005). The findings of this study, especially with the Caucasian model, suggest that changes of AP position of the soft tissue glabella impact the appreciation of facial attractiveness for dentists and may in turn be an adjunct to

assist in achieving superior esthetic results during treatment. Looking at the GALL in this study did not appear to be a significant factor in attractiveness ratings. The photos with the Maxillary incisors anterior to the GALL were not scored as the least attractive. The results for the models of the other races were not consistent. Additional studies may be required to refine the data set and gain additional insight.

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CHAPTER 7: FIGURE CAPTIONS

FIGURE A: Andrews Element II, jaws AP position for the forehead. Forehead prominence and GALL assist in deciding the AP jaw position. Andrews and Andrews (2000).

FIGURE B: Standard camera conditions for capturing the photographs for each model.

FIGURE C: The photograph will be captured with a hanging plumb and a 100-mm ruler fixed in front of the subject's nose. Four altered images will be created by moving the soft tissue glabella forward in a horizontal plane by 2 mm, 4 mm, and 6 mm, and backward in a horizontal plane by 2 mm.

FIGURE D: Image sets of the three models.

FIGURE E: Visual Analog Scale (VAS) used for evaluating the attractiveness of the models in each photo. 0 is the most unattractive and 100 is the most attractive.

FIGURE F: Subject directions attached to the VAS.

FIGURE G: Z-score results for all three models represented on bar graphs.

TABLE 1: Microsoft Excel spread sheet for data collection.

TABLE 2: Variables and statistical analysis.

TABLE 3: Friedman's post hoc test. Significance marked in red.

TABLE 4: Frequency that there was no change in the attractiveness rating between the photos.

TABLE 5: Wilcoxon signed ranks test results for dentists and laypersons. Significance marked in red.

GUIDELINE IV: LIST OF FIGURES

FIGURE A:

ANDREWS' ELEMENT II

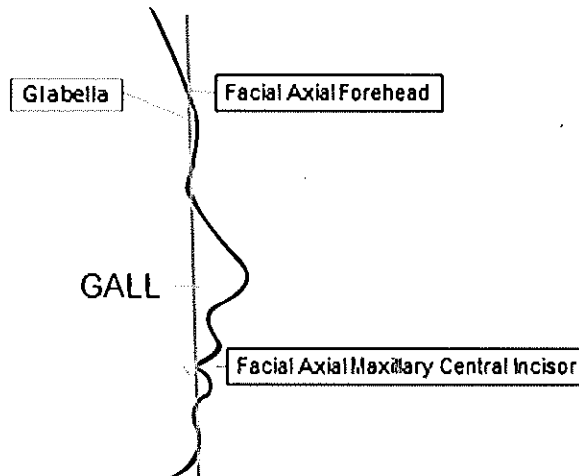


FIGURE B:

STANDARD CONDITIONS FOR CAPTURING PHOTOS

- The camera lens will be pointing directly at the subject.
- Lighting will be provided by the room light fixtures from the ceiling so that the shadows will be projected downwards.
- The camera will be at a fixed distance of 60 inches from the tip of the nose.
The camera will be mounted on a tripod and the height will be adjusted to be in line with the subject's face.
- Camera will be set on Manual Mode with the following settings:
 - F-stop: 11
 - ISO speed: 400
 - Exposure time: 1/125s

FIGURE C:

**PHOTOGRAPHS SET-UP AND
PHOTO ALTERATION**

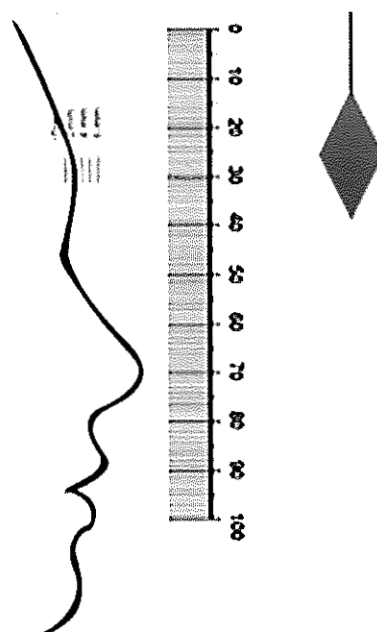
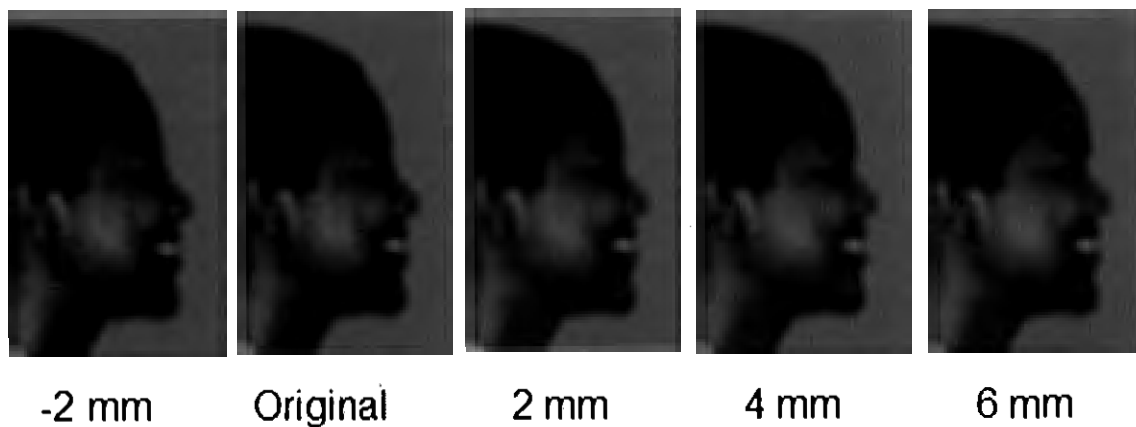


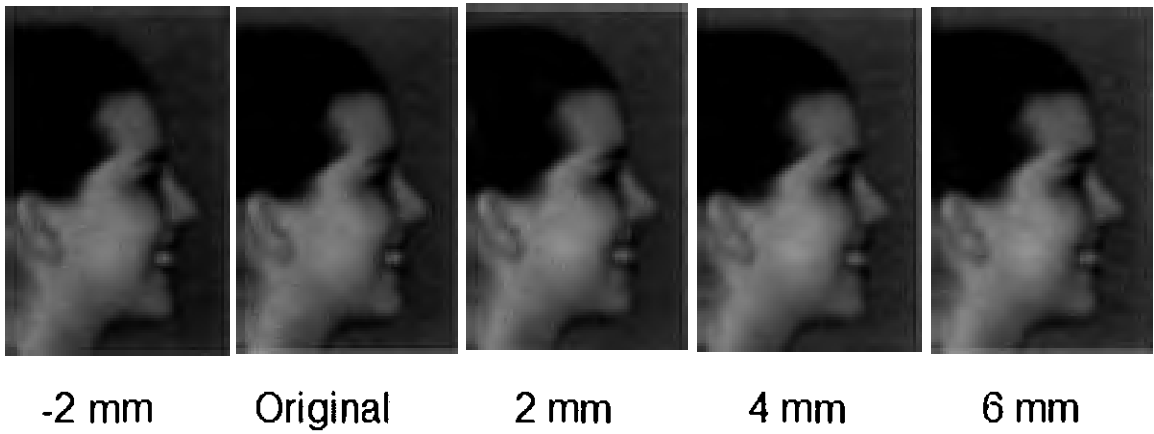
FIGURE D:

ALTERED PHOTOS

Model #1



Model #2



Model #3

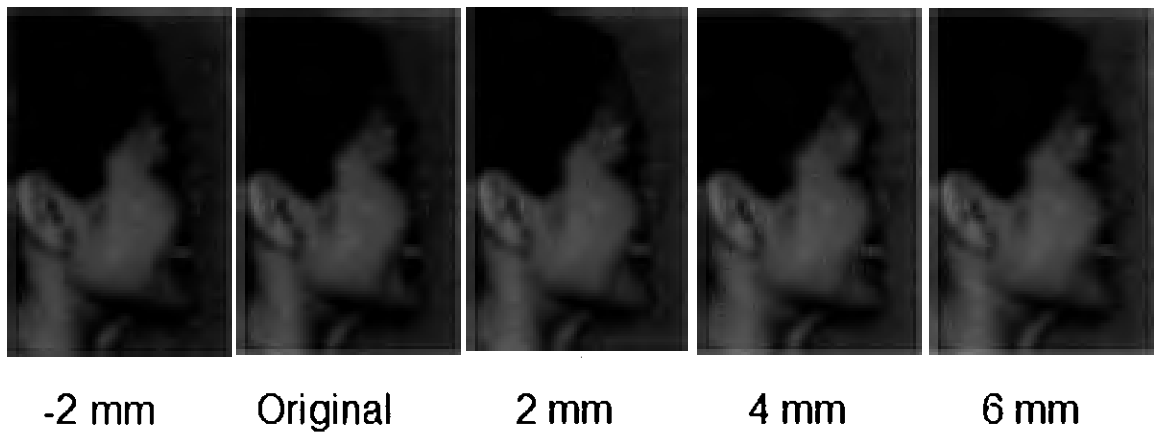


FIGURE E:

VISUAL ANALOG SCALE

Most Unattractive

Most Attractive

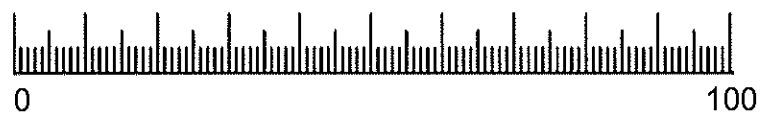


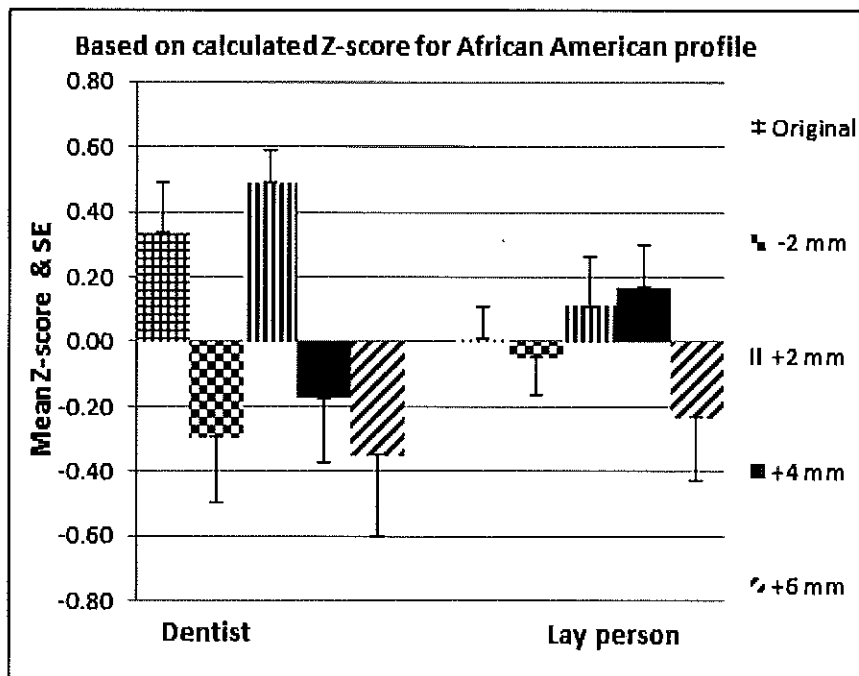
FIGURE F:

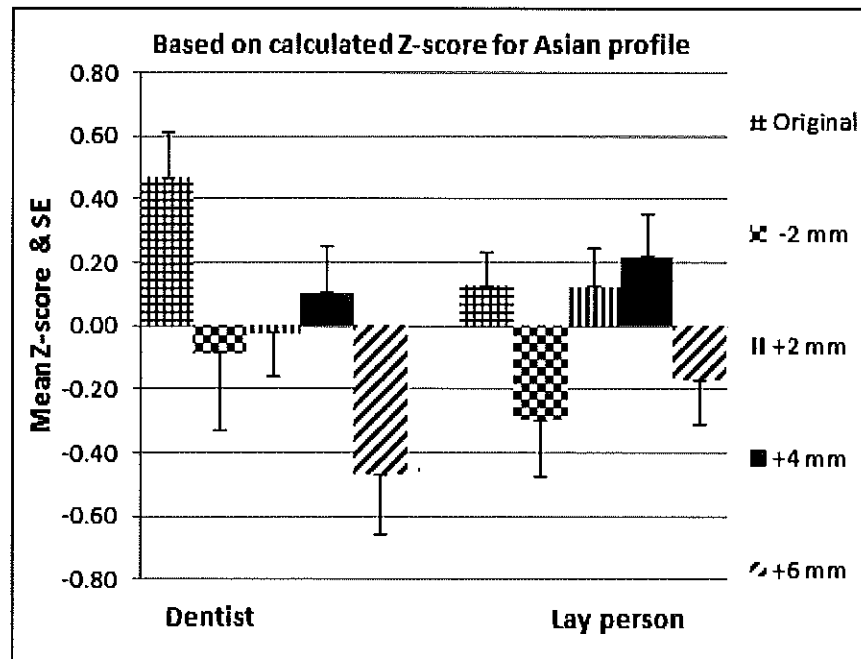
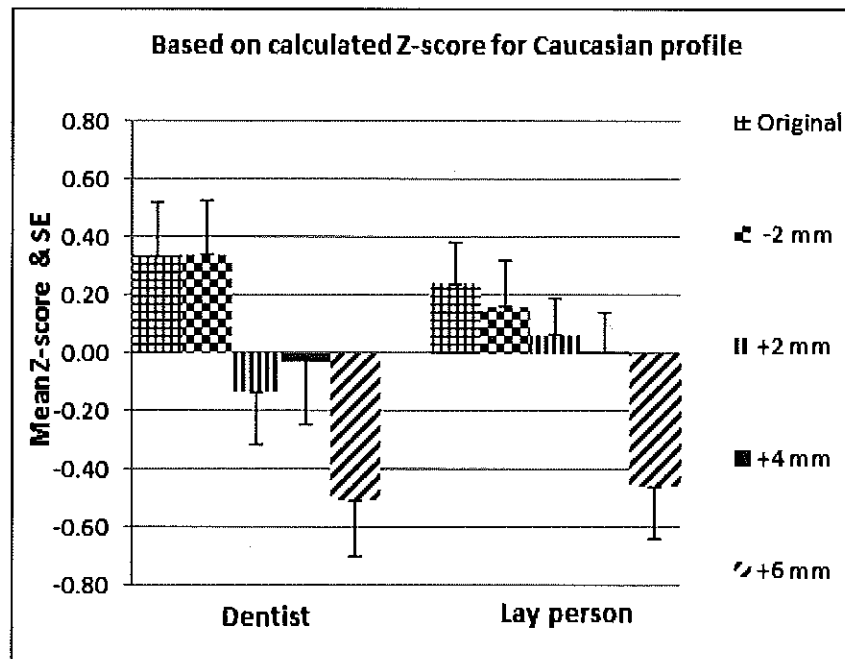
PHOTOGRAPH RATING INSTRUCTIONS

- Please mark the assessment of the subject's facial attractiveness on the 100 mm visual analog scale. Please mark the closest millimeter marking.
- The attractiveness of the photograph is based purely on the criteria, which you deem important.
- You may not return to any previous photographs as you proceed through the binder.
- Spend the same amount of time per photo.

FIGURE G:

BAR GRAPHS OF Z-SCORE RESULTS





GUIDELINE V: LIST OF TABLES

TABLE 1:

DATA COLLECTION SHEET

Subject = Dentist(D)/Laymen(L)			Attractiveness VAS Score 0-100														
			Model 1 - Caucasian					Model 2 - Asian					Model 3 - African American				
Viewing order			14	15	13	11	12	3	5	2	1	4	9	7	8	6	10
Rater Type	Rater No	M/F	Original	-2 mm	2 mm	4 mm	6 mm	Original	-2 mm	2 mm	4 mm	6 mm	Original	-2 mm	2 mm	4 mm	6 mm
Subject	D or L-1																
Subject	D or L-2																
Subject	D or L-3																
Subject	D or L-4																
Subject	D or L-5																
Subject	D or L-6																
Subject	D or L-7																
Subject	D or L-8																
Subject	D or L-9																
Subject	D or L-10																
Subject	D or L-11																
Subject	D or L-12																
Subject	D or L-13																
Subject	D or L-14																
Subject	D or L-15																
Subject	D or L-16																
Subject	D or L-17																
Subject	D or L-18																
Subject	D or L-19																
Subject	D or L-20																

TABLE 2:

STATISTICAL ANALYSIS

Independent Variable / Predictor	Dependent Variable/ Outcome	Statistical Test
Forehead Position (5 variations)	Z-SCORE	FISHER'S FRIEDMAN'S WILCOXON
Model (3 female race variations)		
Subject (20 dentists and 20 laymen)		

TABLE 3:

RESULTS FRIEDMAN'S TEST

Profile Pictures of	P-values using Friedman's test	
	Dentist	Layperson
Caucasian	0.007	0.056
Asian	0.042	0.058
African American	0.003	0.517

TABLE 4:

FREQUENCY OF NO CHANGE IN ATTRACTIVENESS

No Difference Between Photographs			
	Laypersons	Dentists	Fisher's
African-American	50%	0%	P<0.001
Caucasian	40%	0%	P=0.003
Asian	50%	15%	P=0.041

TABLE 5:

RESULTS WILCOXON'S TEST

Dentists**Pairwise comparison of Original vs.**

	-2 mm	+2 mm	+4 mm	+6 mm
Caucasian	0.950	0.049	0.397	0.027
Asian	0.121	0.042	0.176	0.001
African American	0.040	0.639	0.093	0.034

Lay Persons**Pairwise comparison of Original vs.**

	-2 mm	+2 mm	+4 mm	+6 mm
Caucasian	0.734	0.557	0.401	0.016
Asian	0.078	1.000	0.688	0.156
African American	1.000	0.625	0.531	0.305

GUIDELINE VI: MODEL RELEASE AND PERMISSION FORMS

HIPAA PRIVACY		OFFICE OF PUBLIC AFFAIRS AUTHORIZATION FOR RELEASE OF INFORMATION (MEDIA)	
YOUR INFORMATION			
LAST NAME: Holmes	FIRST NAME AND MIDDLE INITIAL: Carla L.	PHONE NUMBER: (704) 831-5569	
ADDRESS: 1103 Ivy Club Ln. Apt 243	CITY/STATE: Landover, MD	ZIP CODE: 20785	
Person/Organization Providing the Information <small>[DoD 6025.18-R CS.3.1.2]</small>		Person/Organization to Receive the Information <small>[DoD 6025.18-R CS.3.1.3]</small>	
Naval Postgraduate Dental School, WRNMMC Bethesda, MD		Naval Postgraduate Dental School staff and residents	
<p style="text-align: center;">Description of the Information to be Released (Provide a detailed description of the specific information to be released) <small>[DoD 6025.18-R CS.3.1.1]</small></p> <p><i>Photographs, video, audio, and digital images, including full-face representations, to be recorded of me or parts of my body in the course of evaluation and treatment at the Naval Postgraduate Dental School.</i></p>			
<p style="text-align: center;">Description of Each Purpose for the Use or Release of the Information (Provide a detailed description of the activity for which the information will be used) <small>[DoD 6025.18-R CS.3.1.4]</small></p> <p><i>For use in medical, dental, scientific, and educational presentations, in resident and continuing education course materials (including those published online), in articles being written for scientific publications, as well as on specialty boards. When used for non-patient treatment purposes all personal identifying data (name, date of birth, SSN, etc) will be removed.</i></p>			

This authorization for release of the above information to the above named persons/organizations will expire on: **N/A (date)**

I understand:

- I authorize the use or disclosure of my individually identifiable health information as described above for the purpose listed. I understand that this authorization is voluntary. **CH**
- I have the right to revoke this authorization. [DoD 6025.18-R CS.3.2.1] **CH**
- I understand the Notice of Privacy Practices provides instructions should I choose to revoke my authorization. **CH**
- I understand that I cannot revoke information once it has been given to the media, because the covered entity has taken action in reliance on the authorization. [DoD 6025.18-R CS.2.5] **CH**
- I understand that I am signing this authorization voluntarily and that treatment, payment or eligibility for my benefits will not be affected if I do not sign this authorization. [DoD 6025.18-R CS.3.2.2.1] **CH**
- I understand if the organization I have authorized to receive the information is not a health plan or health care provider, the released information may no longer be protected by federal privacy regulations. [DoD 6025.18-R CS.3.2.3] **CH**
- I understand I have the right to receive a copy of this authorization. [DoD 6025.18-R CS.3.4] **CH**
- I understand DoD covered entities may use and disclose Protected Health Information (PHI) of individuals who are Armed Forces personnel for activities deemed necessary by appropriate military command authorities to assure the proper execution of the military mission. [DoD 6025.18-R CS.11.1.1] **CH**

Signature: <small>[DoD 6025.18-R CS.3.1.6]</small>	Signature of Parent (if patient is under legal age of consent): <div style="border: 1px solid black; height: 20px; width: 100%;"></div>
Date: 2 April 15	

When using or disclosing Protected Health Information (PHI) in any form or when requesting PHI from another covered entity, a covered entity shall make reasonable efforts to limit the use, disclosure, or request of PHI to the minimum necessary to accomplish the intended purpose of the use, disclosure, or request. [DoD 6025.18-R CS.2.1]

HIPAA PRIVACY

OFFICE OF PUBLIC AFFAIRS AUTHORIZATION FOR RELEASE OF INFORMATION (MEDIA)

YOUR INFORMATION		
LAST NAME: <i>Phokhamyath</i>	FIRST NAME AND MIDDLE INITIAL: <i>Khamrah NMI</i>	PHONE NUMBER: <i>703 944 0314</i>
ADDRESS: <i>Raymond Ct. 2026 Falls Church Rd</i>	CITY/STATE: <i>Falls Church VA</i>	ZIP CODE: <i>22072</i>

Person/Organization Providing the Information <i>[DoD 6025.18-R CS.3.1.2]</i>	Person/Organization to Receive the Information <i>[DoD 6025.18-R CS.3.1.3]</i>
Naval Postgraduate Dental School, WRNMMC Bethesda, MD	Naval Postgraduate Dental School staff and residents

Description of the Information to be Released (Provide a detailed description of the specific information to be released) <i>[DoD 6025.18-R, CS.3.1.1]</i>
<i>Photographs, video, audio, and digital images, including full-face representations, to be recorded of me or parts of my body in the course of evaluation and treatment at the Naval Postgraduate Dental School.</i>

Description of Each Purpose for the Use or Release of the Information (Provide a detailed description of the activity for which the information will be used) <i>[DoD 6025.18-R, CS.3.1.4]</i>
<i>For use in medical, dental, scientific, and educational presentations, in resident and continuing education course materials (including those published online), in articles being written for scientific publications, as well as on specialty boards. When used for non-patient treatment purposes all personal identifying data (name, date of birth, SSN, etc) will be removed.</i>

This authorization for release of the above information to the above named persons/organizations will expire on: *N/A (date)*

I understand:

- I authorize the use or disclosure of my individually identifiable health information as described above for the purpose listed. I understand that this authorization is voluntary.
- I have the right to revoke this authorization. *[DoD 6025.18-R CS.3.2.1]*
- I understand the Notice of Privacy Practices provides instructions should I choose to revoke my authorization.
- I understand that I cannot revoke information once it has been given to the media, because the covered entity has taken action in reliance on the authorization. *[DoD 6025.18-R CS.2.5]*
- I understand that I am signing this authorization voluntarily and that treatment, payment or eligibility for my benefits will not be affected if I do not sign this authorization. *[DoD 6025.18-R CS.3.2.2.1]*
- I understand if the organization I have authorized to receive the information is not a health plan or health care provider, the released information may no longer be protected by federal privacy regulations. *[DoD 6025.18-R CS.3.2.3]*
- I understand I have the right to receive a copy of this authorization. *[DoD 6025.18-R CS.3.4]*
- I understand DoD covered entities may use and disclose Protected Health Information (PHI) of individuals who are Armed Forces personnel for activities deemed necessary by appropriate military command authorities to assure the proper execution of the military mission. *[DoD 6025.18-R CS.11.1.1]*

Signature: <i>K. Phokhamyath</i> <i>[DoD 6025.18-R, CS.3.1.6]</i>	Signature of Parent (if patient is under legal age of consent):	Date: <i>11 MAR 2015</i>
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When using or disclosing Protected Health Information (PHI) in any form or when requesting PHI from another covered entity, a covered entity shall make reasonable efforts to limit the use, disclosure, or request of PHI to the minimum necessary to accomplish the intended purpose of the use, disclosure, or request. *[DoD 6025.18-R CS.2.1]*

HIPAA PRIVACY

OFFICE OF PUBLIC AFFAIRS AUTHORIZATION FOR RELEASE OF INFORMATION (MEDIA)

YOUR INFORMATION		
LAST NAME: Ward	FIRST NAME AND MIDDLE INITIAL: Chloe E.	PHONE NUMBER: 404 845 0216
ADDRESS: 3516 Anderson Road	CITY/STATE: Kensington, MD	ZIP CODE: 20895

Person/Organization Providing the Information <i>[DoD 6025.18-R CS.3.1.2]</i>	Person/Organization to Receive the Information <i>[DoD 6025.18-R CS.3.1.3]</i>
Naval Postgraduate Dental School, WRNMMC Bethesda, MD	Naval Postgraduate Dental School staff and residents

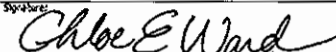
Description of the Information to be Released (Provide a detailed description of the specific information to be released) <i>[DoD 6025.18-R, CS.3.1.1]</i>
<i>Photographs, video, audio, and digital images, including full-face representations, to be recorded of me or parts of my body in the course of evaluation and treatment at the Naval Postgraduate Dental School.</i>

Description of Each Purpose for the Use or Release of the Information (Provide a detailed description of the activity for which the information will be used) <i>[DoD 6025.18-R, CS.3.1.4]</i>
<i>For use in medical, dental, scientific, and educational presentations, in resident and continuing education course materials (including those published online), in articles being written for scientific publications, as well as on specialty boards. When used for non-patient treatment purposes all personal identifying data (name, date of birth, SSN, etc) will be removed.</i>

This authorization for release of the above information to the above named persons/organizations will expire on: **N/A (date)**

I understand:

- I authorize the use or disclosure of my individually identifiable health information as described above for the purpose listed. I understand that this authorization is voluntary.
- I have the right to revoke this authorization. *[DoD 6025.18-R CS.3.2.1]*
- I understand the Notice of Privacy Practices provides instructions should I choose to revoke my authorization.
- I understand that I cannot revoke information once it has been given to the media, because the covered entity has taken action in reliance on the authorization. *[DoD 6025.18-R CS.2.5]*
- I understand that I am signing this authorization voluntarily and that treatment, payment or eligibility for my benefits will not be affected if I do not sign this authorization. *[DoD 6025.18-R CS.3.2.2.1]*
- I understand if the organization I have authorized to receive the information is not a health plan or health care provider, the released information may no longer be protected by federal privacy regulations. *[DoD 6025.18-R CS.3.2.3]*
- I understand I have the right to receive a copy of this authorization. *[DoD 6025.18-R CS.3.4]*
- I understand DoD covered entities may use and disclose Protected Health Information (PHI) of individuals who are Armed Forces personnel for activities deemed necessary by appropriate military command authorities to assure the proper execution of the military mission. *[DoD 6025.18-R C7.11.1.1]*

Signature:  <i>[DoD 6025.18-R, CS.3.1.6]</i>	Signature of Parent (if parent is under legal age of consent):	Date: 11 MARCH 2015
---	--	-------------------------------

*When using or disclosing Protected Health Information (PHI) in any form or when requesting PHI from another covered entity, a covered entity shall make reasonable efforts to limit the use, disclosure, or request of PHI to the minimum necessary to accomplish the intended purpose of the use, disclosure, or request. *[DoD 6025.18-R C8.2.1]**

GUIDELINE VII: ICMJE CONFLICT OF INTEREST STATEMENT



INTERNATIONAL COMMITTEE of
MEDICAL JOURNAL EDITORS

ICMJE Form for Disclosure of Potential Conflicts of Interest

Instructions

The purpose of this form is to provide readers of your manuscript with information about your other interests that could influence how they receive and understand your work. The form is designed to be completed electronically and stored electronically. It contains programming that allows appropriate data display. Each author should submit a separate form and is responsible for the accuracy and completeness of the submitted information. The form is in six parts.

1 Identifying information.

2 The work under consideration for publication.

This section asks for information about the work that you have submitted for publication. The time frame for this reporting is that of the work itself, from the initial conception and planning to the present. The requested information is about resources that you received, either directly or indirectly (via your institution), to enable you to complete the work. Checking "No" means that you did the work without receiving any financial support from any third party – that is, the work was supported by funds from the same institution that pays your salary and that institution did not receive third-party funds with which to pay you. If you or your institution received funds from a third party to support the work, such as a government granting agency, charitable foundation or commercial sponsor, check "Yes".

3 Relevant financial activities outside the submitted work.

This section asks about your financial relationships with entities in the bio-medical arena that could be perceived to influence, or that give the appearance of potentially influencing, what you wrote in the submitted work. You should disclose interactions with ANY entity that could be considered broadly relevant to the work. For example, if your article is about testing an epidermal growth factor receptor (EGFR) antagonist in lung cancer, you should report all associations with entities pursuing diagnostic or therapeutic strategies in cancer in general, not just in the area of EGFR or lung cancer.

Report all sources of revenue paid (or promised to be paid) directly to you or your institution on your behalf over the 36 months prior to submission of the work. This should include all monies from sources with relevance to the submitted work, not just monies from the entity that sponsored the research. Please note that your interactions with the work's sponsor that are outside the submitted work should also be listed here. If there is any question, it is usually better to disclose a relationship than not to do so.

For grants you have received for work outside the submitted work, you should disclose support ONLY from entities that could be perceived to be affected financially by the published work, such as drug companies, or foundations supported by entities that could be perceived to have a financial stake in the outcome. Public funding sources, such as government agencies, charitable foundations or academic institutions, need not be disclosed. For example, if a government agency sponsored a study in which you have been involved and drugs were provided by a pharmaceutical company, you need only list the pharmaceutical company.

4 Intellectual Property.

This section asks about patents and copyrights, whether pending, issued, licensed and/or receiving royalties.

5 Relationships not covered above.

Use this section to report other relationships or activities that readers could perceive to have influenced, or that give the appearance of potentially influencing, what you wrote in the submitted work.

Definitions.

Entity: government agency, foundation, commercial sponsor, academic institution, etc.

Grant: A grant from an entity, generally (but not always) paid to your organization

Personal Fees: Monies paid to you for services rendered, generally honoraria, royalties, or fees for consulting, lectures, speakers bureaus, expert testimony, employment, or other affiliations

Non-Financial Support: Examples include drugs/equipment supplied by the entity, travel paid by the entity, writing assistance, administrative support, etc.

Other: Anything not covered under the previous three boxes

Pending: The patent has been filed but not issued

Issued: The patent has been issued by the agency

Licensed: The patent has been licensed to an entity, whether earning royalties or not

Royalties: Funds are coming in to you or your institution due to your patent



ICMJE Form for Disclosure of Potential Conflicts of Interest

Section 1: Identifying Information

1. Given Name (First Name) Heldl	2. Surname (Last Name) Ellis	3. Date 23-June-2015
4. Are you the corresponding author? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Corresponding Author's Name Ling Ye, DDS, PhD
5. Manuscript Title The Effects of Computer-Aided Antero-Posterior Forehead Movement on Ratings of Facial Attractiveness.		
6. Manuscript Identifying Number (if you know it) 		

Section 2: The Work Under Consideration for Publication

Did you or your institution at any time receive payment or services from a third party (government, commercial, private foundation, etc.) for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.)?

Are there any relevant conflicts of interest? ☐ Yes ☒ No

Section 3: Relevant financial activities outside the submitted work.

Place a check in the appropriate boxes in the table to indicate whether you have financial relationships (regardless of amount of compensation) with entities as described in the instructions. Use one line for each entity; add as many lines as you need by clicking the "Add +" box. You should report relationships that were present during the 36 months prior to publication.

Are there any relevant conflicts of interest? ☐ Yes ☒ No

Section 4: Intellectual Property – Patents & Copyrights

Do you have any patents, whether planned, pending or issued, broadly relevant to the work? ☐ Yes ☒ No



ICMJE INTERNATIONAL COMMITTEE of
MEDICAL JOURNAL EDITORS

ICMJE Form for Disclosure of Potential Conflicts of Interest

Section 5: Relationships not covered above

Are there other relationships or activities that readers could perceive to have influenced, or that give the appearance of potentially influencing, what you wrote in the submitted work?

- ☐ Yes, the following relationships/conditions/circumstances are present (explain below):
- ☒ No other relationships/conditions/circumstances that present a potential conflict of interest

At the time of manuscript acceptance, journals will ask authors to confirm and, if necessary, update their disclosure statements. On occasion, journals may ask authors to disclose further information about reported relationships.

Section 6: Disclosure Statement

Based on the above disclosures, this form will automatically generate a disclosure statement, which will appear in the box below.

Dr. Ellis has nothing to disclose.

Evaluation and Feedback

Please visit <http://www.icmje.org/cgi-bin/feedback> to provide feedback on your experience with completing this form.

GUIDELINE VIII: INSTITUTIONAL REVIEW BOARD APPROVAL



WALTER REED NATIONAL MILITARY MEDICAL CENTER
OFFICE OF THE COMMANDER
6901 WISCONSIN AVENUE
BETHESDA MARYLAND 20889-5600

Date: February 24, 2015

From: WRNMMC DRP Determinations
To: LCDR Heidi Ellis, DC, USN

Subj: WRNMMC DRP Determinations REVIEW OF 395642-1

PROJECT TITLE: [395642-1] The effects of Computer-aided Antero-posterior Forehead Movement on Ratings of Facial Attractiveness

REFERENCE #:

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE:

1. Thank you for your submission of New Project materials for this research study. The WRNMMC DRP Determinations has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations in category 32 CFR 219.101(b)(2). You may begin your project upon receipt of this letter.
2. When you complete your research you must file a closure report.
3. Your project does not involve the use or disclose of protected health information, therefore HIPAA does not apply to this project.
4. Any presentations or publications that arise from this project must go through appropriate publications clearance review.
5. Any changes to this protocol must be reviewed by this office to ensure the regulatory status of your protocol does not change.
6. If you have any questions, the POC is Scott Baumgartner at 301-295-8217 or scott.j.baumgartner.mil@mail.mil. Please include your project title and reference number in all correspondence with this committee.

This document has been electronically signed in accordance with all applicable regulations, and a copy is retained within our records.